Original Article

The Risk of Suicide according to Drug Abuse and Nicotine Dependence in Patients with War Injuries and Chronic Traumatic Stress Disorder

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Abstract

Background: The incidence of suicide is higher in individuals with post-traumatic stress disorder (PTSD) than the general population. This prevalence rate is related to many factors including drug dependence. This study was conducted in people wounded during the Iran-Iraq war with PTSD, in order to compare the risk of suicide in those with and without drug and nicotine dependence.

Methods: This cross-sectional study, conducted in 2007–2008, comprised 104 male individuals who had participated in the Iran-Iraq war and had a current diagnosis of PTSD. They had been referred to a psychiatry hospital and the psychiatrists' offices in Kerman, Iran. Three questionnaires were used including Davidson Trauma Scale, California Risk Estimator for Suicide and the Fagerstrom Test for Nicotine Dependence to assess the severity of PTSD, the risk of suicide, and nicotine dependence, respectively. Data were analyzed by descriptive and analytical statistics using chi-square, regression, analysis of variance (ANOVA), student-t and correlation tests.

Findings: The severity of PTSD was significantly different in individuals with low to moderate dependence on cigarette smoking than in those with heavy dependence on smoking (P = 0.002). However, the corresponding figures were not significantly different in individuals with and without substance abuse. Although the risk of suicide had no significant difference among individuals with low to moderate dependence on cigarettes compared to those with high nicotine dependence, it was higher in subjects with substance abuse than in those without it (P = 0.0001).

Conclusion: Our findings suggest that dependence on cigarettes may not play a role in increasing the risk of suicide, whereas the dependence on opium and its derivatives may increase this risk. Therefore, prevention and treatment of drug abuse may be effective on the incidence of suicide in patients with war injuries and PTSD.

Keywords: Suicide, Drug dependency, Post-traumatic stress disorder, Iran.

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Introduction

Generally, post-traumatic stress disorder (PTSD) is a group of symptoms occurring after exposure to an extremely severe damaging event. It is an abnormal response, which develops after severe stressful events such as serious accidents or natural disasters, as well as cases which are joined with severe irritation, numbness and excessive separation of the environment, or experiencing a temporary disturbance of related mechanisms. It is accompanied by annoying and disturbing dreams about the traumatic events.[1,2]

The lifetime prevalence of PTSD is suggested to be about one to three percent in the general population. However, up to 15 percent of the population may have subclinical forms of this disorder.[1] Many PTSD patients are victims of war and natural disasters. Since PTSD poses a burden of disease for the health services, as well as an economic burden at individual and society levels,[2] its immediate and comprehensive treatment will reduce the social burden of the disorder. Iran is among the high-risk countries of the world which also experienced a long term war and therefore the burden should be considered with a more professional and sophisticated vision and perspective.

Suicide is frequent in individuals with psychiatric disorders like depression, and is one of the serious problems in people with PTSD. The incidence of suicide in individuals with PTSD is higher than normal population.[3] Furthermore, the relationship between PTSD and drug abuse is well-documented.[4] Risk factors associated with PTSD and drug abuse are similar to those of PTSD and suicide. Several underlying mechanisms are proposed in this regard. The first is childhood conduct disorder and adult anti-opportunity behavior.[5] Another hypothesis states that the drug covers the symptoms of PTSD. The frequent co-existence of PTSD and drug abuse may be a result of the same brain mechanisms altered by the drug abuse and trauma.

In the current literature related to PTSD and drug abuse, the role of hypothalamic-pituitary-adrenal (HPA) axis is repeatedly discussed.[6] Likewise, this axis plays a role in suicide. It is suggested that stress increases cortisol and corticotropin-releasing hormone (CRH), which in turn may increase the activity of the HPA axis. On the contrary, it can reduce the basal level of CRH concentration which may in turn, lead to increased suicidal behavior. Consequently, this common biological mechanism may be a cause for the co-existence of PTSD, suicide and drug abuse. This study was conducted to determine the risk of suicide in the Iran-Iraq war wounded patients who suffered from PTSD, and to compare it in those individuals with and without dependency on drugs and nicotine.

Methods

This descriptive study was conducted among men who had participated in the eight-year Iran-Iraq war and were affected by PTSD according to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR) criteria.

These patients were selected randomisely among those who were referred to the Shahid Beheshti Psychiatric Hospital, affiliated to Kerman University of Medical Sciences and to the psychiatrists' offices during 2007-2008. The exact risk of suicide in Iran was not available, so according to the previous studies and considering a P of 0.5, confidence interval (CI) of 95% and the absolute accuracy of 10%, the sample size was calculated as 100.

A total of 104 subjects participated in this survey. For selecting participants, we tried to include about one-third from the hospitalized patients, one third from the clients to the psychiatrists' offices and a third from the patients who have been previously admitted to hospitals and had hospital records which were interviewed by home visit.

Three questionnaires including Davidson Trauma Scale, California Risk Estimator for Suicide and Fagerstrom Test for Nicotine Dependence (FTND) were used to determine the severity of PTSD, the risk of suicide and the nicotine dependence in smokers, respectively.

Davidson Trauma Scale: It is a questionnaire based on 17 questions with six options: never, once, 2-3 times a week and every day, which has to be completed in about 10 minutes.[7]

California Risk Estimator for Suicide: It consists of 15 items including age, occupation, sexual orientation, financial resources, issues and events surrounding the abnormal stress, hours of sleep per night, rate of weight loss in the stress episodes, severity of impulses for current suicide, history of suicidal attempt, presence of serious risk for death, number of

previous psychiatric hospitalizations, results of previous efforts to find support, family history of emotional disorders, reactions of the interviewer with the interviewee, ideas of harm and injury assignment, as well as the risk of losing financial resources. Based on the abovementioned items, each participant receives the total points for estimating the risk of suicide, the sum of which makes up the second part of the questionnaire. For assessing the risk of suicide, respondents were divided into five groups in terms of the suicide risk: very low, low, average, high and very high. The questionnaire took about 5 minutes to be completed.[8]

Fagerstrom Test for Nicotine Dependence (FTND): This questionnaire has 8 multiple choice questions with a score from zero to 2, and a sum of 14 points.[9] Scores 1-6 and 7-11 were considered as low to moderate and high nicotine dependency, respectively. The questionnaire was completed in about 3 minutes.

From all of patients a written consent was obtained. Information obtained from the scores assigned to each response, were analyzed by the descriptive and analytical analysis by using statistical tests such as chi-square, regression, analysis of variance (ANONA), Student-t and correlation tests.

Results

The average age of study participants was 39.90 ± 4.33 years, with a range of 34 to 61 years. Their mean duration of disease was 18.31 ± 1.99 years, with a minimum of 14 years and a maximum of 22 years. In most cases this duration was 20 years. The mean score of PTSD, calculated based on the Davidson Trauma Scale, was 48.17 ± 13.28 years. The minimum and maximum scores were 14 and 72, respectively (Table 1).

The mean of the overall scores, based on California Risk Estimator for Suicide was 573.75 ± 11.52 with the minimum and maximum scores of 35 and 809, respectively (Table 2).

The frequency of the risk for suicide, according to the California questionnaire is presented in table 3. The average score for nicotine dependency, according to the FTND, was 5.16 ± 2.43 with a range of zero to nine. Overall, 66 participants (63.5%) stated a history of opium abuse. Average duration of drug abuse was 4.84 ± 2.81 years. They noted a history of addiction from one to 18 years.

The two groups with moderate and severe dependency on nicotine showed different intensity of PTSD (P = 0.002). The comparison of the PTSD in the two groups with and without drug abuse did not show any significant difference. The mean score of the risk for suicide was not significantly different according to the intensity of dependency on nicotine (Table 4).

As presented in table 5, the average score for risk of suicide was significantly higher in individuals without drug abuse than in drug abusers (619.73 ± 101.79 vs. 493.89 ± 78.1, respectively, P <0.00001).

Table 1. Central and dispersion index scores of post-traumatic stress disorder (PTSD), suicide risk score and the score for nicotine dependence

Score	Total scores	Mean	Variance	Standard deviation	Min	Percentile 25	Median	Percentile 75	Max	Mode
PTSD	5010	48.17	176.49	13.28	14	40	50	59	72	40
Suicidal risk	59670	573.75	12437.31	111.52	315	471.5	578	624.5	809	427
Nicotine dependence	382	5.16	5.94	2.43	0		6	7	9	5

Table 2. Risk of suicide in participants responding to the California questionnaire

Group number (scores)	Relative risk	Approximate amount of risk (%)	Frequency	Relative Frequency (%)	Cumulative frequency
(0-271) 1	very low	< 1	-	-	-
(272-344) 2	Low	1-2.5	2	1.9	1.9
(345-465) 3	Moderate	2.5-5	20	19.2	21.2
(466-553)	High	5-10	16	15.4	36.5
554 ≥	very high	> 10	66	63.5	100
	Total		104	100	-

Table 3. Prevalence of nicotine dependence in persons responding to the FTND questionnaire (72 out of 104 persons)

Dependency	Frequency	Frequency (%)	Cumulative frequency
Low-moderate	48	66.7	66.7
High	24	33.3	100
Total	72	100	___

Two of the respondents received a null score, and were not considered in any groups.

Table 4. Central and dispersion index scores and risk of suicide in the two groups with low to moderate and high nicotine dependence

Nicotine dependence	Mean	Variance	Standard deviation	Min	Percentile 25	Median	Percentile 75	Max	Mode
Low-moderate	601.875	12859.859	113.40	433	521.5	585	679.5	806	491
High	609.250	7404.543	86.05	413	575	617	625.5	809	575

T value = 0.280 P = 0.786

Table 5. Central and dispersion index scores and risk of suicide in the two groups with and without a history of drug abuse

Drug abuse history	Mean	Variance	Standard deviation	Min	Percentile 25	Median	Percentile 75	Max	Mode
Yes	619.727	10361.863	101.793	433	556	619	651	809	467
No	493.895	6099.556	78.100	315	433	479	578	601	427

T value = 6.581 P.V = 0.000

Discussion

The incidence of suicide in persons with PTSD is higher than the normal population.[10,11] It is shown that traumatic events without PTSD cannot have a role in suicide, whereas PTSD is considered as an independent factor for suicide.[12] In contrast, it is documented that PTSD may increase the dependence on drugs, and in turn the incidence of suicide. A 25-year longitudinal study has documented the causal relationship of PTSD with drug dependence and suicide, notably among adults.[13] The current study showed that people with PTSD and drug abuse have increased the risk of suicide which is consistent with some other studies. The high mortality rate associated with drug abuse is considered to be related to various factors as the AIDS epidemic, drug-related accidental deaths and suicides. Drug abusers have higher rates of suicidal thoughts, especially those who had lack of family support and psychosocial disorders as well as those using several types of drugs.[14]

A study conducted on 948 American adolescents referred to centers for quitting addiction reported that in the interview conducted every 3 to 12 months, at least 30% had suicidal thoughts, and 12% reported an attempt to suicide. Half of them had emotional disorders and nearly a third of them received medical treatment for these disorders.[15]

A study in India followed 173 drug abusers for 6 to 10 years and found that 87 persons continued the drug abuse, 11 had occasional use and 40 had quitted the drug. During this period, 29 persons (17%) died, 16 of which committed suicide. Moreover, 28 persons (17%) had an attempt to suicide.[16]

A study conducted in Zahedan, Iran, suggested that 16.8% of individuals referred for addiction treatment had at least one suicidal attempt. Among them those who used crack and intravenous injection of drugs, as well as the younger ones and the single individuals had higher rates of suicide.[17]

Case-control and prospective studies have documented an association between smoking and suicide. Three possible reasons were stated in this regard: smokers have underlying background that raises the risk of suicide; or smoking can cause hard and debilitating conditions making the person vulnerable to suicide; and/or smoking might lower the serotonin levels and mono-oxidase.

On the other hand, cessation of smoking may cause essential depression in some smokers and as a result, it may increase the risk of suicide. Quit smoking medications such as bupropion, rimonabant and varenicline are also reported to be associated with suicide.[18] In the current study, smoking did not increase the risk of suicide, but because of the study design, the prevalence of this disorder cannot be compared with the general population.

Conflict of Interest: The Authors have no conflict of interest.

References

1. Sadock BJ, Sadock VA. Kaplan & Sadock's comprehensive textbook of psychiatry. 7th ed. Philadelphia: Lippincott Williams & Wilkins, 2000.
2. Hidalgo RB, Davidson JR. Posttraumatic stress disorder: epidemiology and health-related considerations. J Clin Psychiatry 2000; 61(Suppl 7): 5-13.
3. Kessler RC. Posttraumatic stress disorder: the burden to the individual and to society. J Clin Psychiatry 2000; 61(Suppl 5): 4-12.
4. Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, et al. Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiologic Catchment Area (ECA) Study. JAMA 1990; 264(19): 2511-8.
5. Breslau N, Davis GC, Andreski P, Peterson E. Traumatic events and posttraumatic stress disorder in an urban population of young adults. Arch Gen Psychiatry 1991; 48(3): 216-22.
6. Norman SB, Myers US, Wilkins KC, Goldsmith AA, Hristova V, Huang Z, et al. Review of biological mechanisms and pharmacological treatments of comorbid PTSD and substance use disorder. Neuropharmacology 2011.
7. Hashemian F, Khoshnood K, Desai MM, Falahati F, Kasl S, Southwick S. Anxiety, depression, and posttraumatic stress in Iranian survivors of chemical warfare. JAMA 2006; 296(5): 560-6.
8. Abdollahian E, Modares Gharavi M, Soltanifar A, Mokhber N. Relationship between Positive and Negative Symptoms of Schizophrenia and Psychotic Depression with Risk of Suicide. Iranian Journal of Psychiatry and Behavioral Sciences 2009; 3(1): 27-32.
9. Ghaffari Nejad AR, Pouya F .Prevalence of Nicotine and Opium Dependence among Psychiatric In-patients in Kerman, Southwestern Iran. IJMS 2002; 27(4): 161.
10. Gradus JL, Qin P, Lincoln AK, Miller M, Lawler E, Sorensen HT, et al. Posttraumatic stress disorder and completed suicide. Am J Epidemiol 2010; 171(6): 721-7.
11. Amir M, Kaplan Z, Efroni R, Kotler M. Suicide risk and coping styles in posttraumatic stress disorder patients. Psychother Psychosom 1999; 68(2): 76-81.
12. Wilcox HC, Storr CL, Breslau N. Posttraumatic stress disorder and suicide attempts in a community sample of urban american young adults. Arch Gen Psychiatry 2009; 66(3): 305-11.
13. Price RK, Risk NK, Haden AH, Lewis CE, Spitznagel EL. Post-traumatic stress disorder, drug dependence, and suicidality among male Vietnam veterans with a history of heavy drug use. Drug Alcohol Depend 2004; 76(Suppl): S31-S43.
14. Mino A, Bousquet A, Broers B. Substance abuse and drug-related death, suicidal ideation, and suicide: a review. Crisis 1999; 20(1): 28-35.
15. Ramchand R, Griffin BA, Harris KM, McCaffrey DF, Morral AR. A prospective investigation of suicide ideation, attempts, and use of mental health service among adolescents in substance abuse treatment. Psychol Addict Behav 2008; 22(4): 524-32.
16. Rao AV, Vasudevan PM. The course and outcome of drug addiction. A follow-up study of 178 cases in Madurai, South India. Drug Alcohol Depend 1980; 6(6): 351-7.
17. Bakhshani NM, Bahareh B, Bakhshani S, Lashkaripour K. Suicidal attempts among individuals seeking treatment for substance dependency. Procedia - Social and Behavioral Sciences 2010; 5: 1982-5.
18. Kausch O, McCormick RA. Suicide prevalence in chemical dependency programs: preliminary data from a national sample, and an examination of risk factors. J Subst Abuse Treat 2002; 22(2): 97-102.

مقاله پژوهشی

بررسی خطر اقدام به خودکشی و وابستگی به مواد و نیکوتین در مجروحین جنگی مبتلا به اختلال استرس بعد از سانحه مزمن

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چکیده

مقدمه: میزان شیوع خودکشی در افراد مبتلا به اختلال استرس بعد از سانحه (Post-traumatic stress disorder یا PTSD) بالاتر از جمعیت عمومی می‌باشد، این شیوع بالاتر با عوامل مختلفی در این افراد مرتبط است. از جمله این عوامل، وابستگی به مواد می‌باشد. این مطالعه جهت مقایسه خطر خودکشی در مجروحین جنگ ایران و عراق مبتلا به PTSD با وابستگی به مواد و نیکوتین و مجروحین جنگی بدون وابستگی به مواد و نیکوتین انجام شد.

روش‌ها: مطالعه از نوع توصیفی مقطعی بود و در ۱۰۴ مرد شرکت کننده در جنگ ایران و عراق با تشخیص PTSD مراجعه کننده به بیمارستان شهید بهشتی کرمان و همچنین مطب‌های روان‌پزشکان شهر کرمان در سال ۸۸–۱۳۸۷ انجام شد. در این مطالعه از سه پرسش‌نامه Davidson trauma scale (برای شدت PTSD)، California risk estimator for suicide (برای شدت خطر خودکشی) و Fagerstrom test for Nicotine dependency (برای ارزیابی وابستگی به نیکوتین) استفاده گردید.

یافته‌ها: شدت PTSD در گروه وابسته کم تا متوسط و گروه وابسته شدید به سیگار متفاوت بود (P = ۰/۰۰۲)، ولی در دو گروه بدون سوء مصرف مواد و با سوء مصرف مواد تفاوتی نداشت. خطر خودکشی در گروه وابستگی کم تا متوسط با گروه با وابستگی زیاد نیکوتین تفاوت معنی‌داری نداشت (P = ۰/۷۷)، ولی در افراد با اختلال سوء مصرف مواد و بدون آن متفاوت بود (P = ۰/۰۰۰۱).

نتیجه‌گیری: به نظر می‌رسد وابستگی به سیگار نمی‌تواند در افزایش خطر خودکشی نقش داشته باشد. اما وابستگی به تریاک و مشتقات آن در افزایش خطر خودکشی مؤثر می‌باشد. بنابراین پیش‌گیری و درمان سوء مصرف مواد در جلوگیری از بروز موارد خودکشی در مجروحین جنگی مبتلا به PTSD ممکن است مؤثر باشد.

واژگان کلیدی: خودکشی، وابستگی به مواد، اختلال استرس بعد از سانحه، ایران.

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